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First record of the genus *Alisalia* Casey from Canada, description of two new species, and a key to all Nearctic species of the genus (Coleoptera, Staphylinidae, Aleocharinae)

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Abstract

The genus *Alisalia* Casey is reported from Canada for the first time. Three species were discovered in New Brunswick, one previously described from North Carolina, *Alisalia testacea* Casey, and two species new to science: *Alisalia minuta* Klimaszewski & Webster, **sp. n.**; and *Alisalia elongata* Klimaszewski & Webster, **sp. n.** Illustrations of the body and genitalia are presented for the species occurring in Canada and for the types of previously described species from North America. New data on habitat are presented. A key to Nearctic species is provided. The following new synonymies are proposed, names in brackets are valid: *Alisalia austiniana* Casey (=*A. parallela* Casey); and *A. minutissima* Casey (=*A. brevipennis* Casey). Lectotypes are designated for the following species: *Alisalia austiniana* Casey, *A. brevipennis* Casey, *A. testacea* Casey, and *A. bistriata* (Bernhauer).

Keywords

Alisalia, Aleocharinae, Canada, New Brunswick, new species, taxonomy

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Introduction

The genus *Alisalia* was erected by Casey (1911) to embrace seven new Nearctic species ranging in distribution from Rhode Island and Pennsylvania in the north to Texas in the south, with one species described from Colorado. Bernhauer (1909) described the first *Alisalia* species from North America as *Atheta* (*Meotica*) *bistriata* Bernhauer, which was correctly considered by Casey (1911) and Seevers (1978) as *Alisalia*. Two of Casey's species are synonymized here leaving six valid species out of eight described by Casey (1911) and Bernhauer (1909). The total number of valid *Alisalia* species in the Nearctic region now stands at eight with the addition of the two new species from New Brunswick. The species of this genus are very small and externally similar to each other. The most reliable diagnostic features are those associated with the shape of the tubus of the median lobe of the aedeagus in lateral view, and include the shape and length of the subapical and apical portions of the tubus, and the degree of convexity of the median and basal portions of the tubus. The shape of the spermatheca is not reliable for species identification in this genus because this structure is very small, weakly sclerotized, and usually covered by multiple coils of a thin duct. The length of the elytra at the suture, the width of the antennal articles, the size of the eyes, and the width and length of the body are additional diagnostic characters. Females are best identifiable by association with the males. All Canadian species of this genus were discovered in New Brunswick and constitute the first generic and specific records for this country.

The objectives of this paper are to provide new records of the genus from Canada, describe the new species and their habitat, provide a key to the species occurring in Canada, and enhance the knowledge of biodiversity for our fauna.

Methods and conventions

Collection method

Adults of *Alisalia* are hygrophilous and were collected on cobblestone beaches near river and lake margins, and on the margin of a large vernal pond. Adults were collected from under cobblestones, and sifted from moist leaf litter near water. Casey (1911) recorded some *Alisalia* species from "fungous earth".

Specimen preparation and types

Some 30 adult specimens of *Alisalia* were examined and most specimens were dissected. The genital structures were dehydrated in absolute alcohol and mounted in Canada balsam on celluloid microslides and pinned with the specimens from which they originated. The photographs were taken using an image processing system (Nikon SMZ 1500 stereoscopic microscope; Nikon Digital Camera DXM 1200F; and Adobe Photoshop software).

Terminology mainly follows that used by Seevers (1951) and Ashe (2001). The ventral part of the median lobe of the aedeagus is considered to be the part of the bul-

bus containing the foramen mediale, the entrance of the ductus ejaculatorius, and the adjacent venter of the tubus; the opposite side is referred to as the dorsal part.

All types of formerly described Nearctic *Alisalia* species have been studied and illustrated for the first time (Figs 23–38). *Alisalia minutissima* is considered here as the synonym of *A. brevipennis* based on similar size, body proportions and the similarly shaped median lobe of aedeagus in lateral view (Figs 25, 27, 36, 37). The median lobe of aedeagus of *A. minutissima* is slightly distorted but under different angles of observations proved to be almost identical to that of *A. brevipennis*. *Alisalia austiniana* is synonymized with *A. parallela* on the same principle as described above (Figs 26, 28, 33, 34). Lectotypes are designated for the following species because there was no original holotype designation: 1) *Alisalia austiniana* Casey (Figs 26, 34), label data: [Tex.; male; *austiniana* Csy.; Type USNM 38796; Casey bequest 1925; lectotype designation: Gusarov 1999 (unpublished), and Klimaszewski 2009; *Alisalia parallela* Casey: det. Gusarov 1999, and Klimaszewski 2009 (USNM) male]; 2) *A. brevipennis* Casey (Figs 27, 36), label data: [R.I.; *Alisalia brevipennis* Csy.; Type USNM 38795; Casey bequest 1925; lectotype designation: Gusarov 1999 (unpublished), and Klimaszewski 2009; *Alisalia brevipennis* Casey: det. Gusarov 1999 and Klimaszewski 2009 (USNM) male]; 3) *A. testacea* Casey (Figs 23, 31), label data: [N.C., male; *testacea*-7, paratype, 38798; Casey bequest 1925; lectotype designation: Gusarov 1999 (unpublished), and Klimaszewski 2009; *Alisalia testacea* Casey: det. Gusarov 1999 and Klimaszewski 2009 (USNM) male]; and 4) *Alisalia bistriata* (Bernhauer) (Figs 30, 38), label data: [Jeannette, Pa., H.G. Klages; bistriata Brh. Typus – Fenyes; Chicago NHMus. M. Bernhauer Collection (FMNH)].

Distribution. Distribution maps, created using ArcMap and ArcGIS, are presented for each species in New Brunswick, Canada. Each species is cited with current distribution in Canada and the United States using abbreviations for the states, provinces and territories. New provincial records are indicated in bold under Distribution. The following abbreviations are used in the text:

Acronyms of collections examined and referred to in this study are as follows:

AFC Atlantic Forestry Centre, Fredericton, New Brunswick, Canada
FMNH The Field Museum, Chicago, Illinois, U.S.A.
LFC Laurentian Forestry Centre, Quebec, Quebec, Canada
RWC Reginald Webster Collection, Charters Settlement, New Brunswick, Canada
NMNH Smithsonian Institution, Washington, D.C., U.S.A.

Results

Three species of *Alisalia* are newly reported from New Brunswick and Canada (see the checklist) bringing the total number of all aleocharine species known from the province to 178 (see recent account of New Brunswick species by Webster and Klimaszewski 2009). Two species of *Alisalia* are described as new to science, and one, *A. testacea*,

was previously described species from North Carolina. Collection and bionomic data for all these species are presented in the bionomic sections under each species description. Most adults were found under wet cobblestones near various water bodies, or in leaf litter on a vernal pond margin.

All *Alisalia* species are illustrated for the first time, including body images of the types and their genital structures, the median lobe in lateral view and, if applicable, the female spermatheca (Figs 23–38).

Species review

Tribe Oxypodini Thomson, 1859
Subtribe Meoticina Seevers, 1978

Genus *Alisalia* Casey, 1911

Figs 1–38

Alisalia Casey 1911: 219; Fenyes 1918: 21; Blackwelder 1952: 46; Seevers, 1978: 80; Moore and Legner 1975: 337; Ashe 2001: 305, 363. Type species: *Alisalia brevipennis* Casey, fixed by Fenyes (1918), by subsequent designation.

Description. Body minute and slender, length 1.0–1.9 mm, subparallel and dorsoventrally flattened (Figs 1–4, 23–30); coloration yellowish rust-brown to brown, with head, elytra and part or entire abdomen darker than remainder of body and brown to dark brown; integument of forebody with approximately uniformly distributed microsetae and a few macrosetae on head, pronotum and base of elytra; isodiametric meshed microsculpture present, but scarcely visible; head with well-developed temporal region, tempora longer than diameter of eye; infraorbital carinae present and complete; gular suture subparallel and broadly separated; eyes small, finely faceted and broadly separated; labrum broadly oval; maxillary palpus with 4 articles, last one needle-shaped, about as long as 1/3 of penultimate article; labial palpus with 3 articles; right mandible bearing one small internal tooth, left mandible entire and does not bear teeth; ligula short, narrow and entire; antennae with three basal segments elongate, 3rd slightly shorter than 2nd, 4th segment small and quadrate to slightly transverse, 5th slightly broader than 6th, 4–10 segments transverse and incrassate (Figs 1–4, 23–30); pronotum transverse with visible hypomera from the side; mesocoxae contiguous; mesosternal process short, acute at tip and separated by long isthmus; metasternal process triangular and small; elytra more or less transverse, and as broad as pronotum or slightly broader (Figs 1–4, 23–30); abdomen subparallel with strongly impressed horizontal, broadly arcuate basal carinae; tarsal formula 4-4-4; tarsal claws falcate; spermatheca small and weakly sclerotized, covered by multiply coiled duct, capsule narrowly elongate and attached to elongate stem connected with coils of duct (Figs 9, 16, 35); median lobe of aedeagus variably shaped in lateral view, tubus bearing smaller or larger median swell; internal sac usually with two inconspicuous small structures; flagellum well developed, and

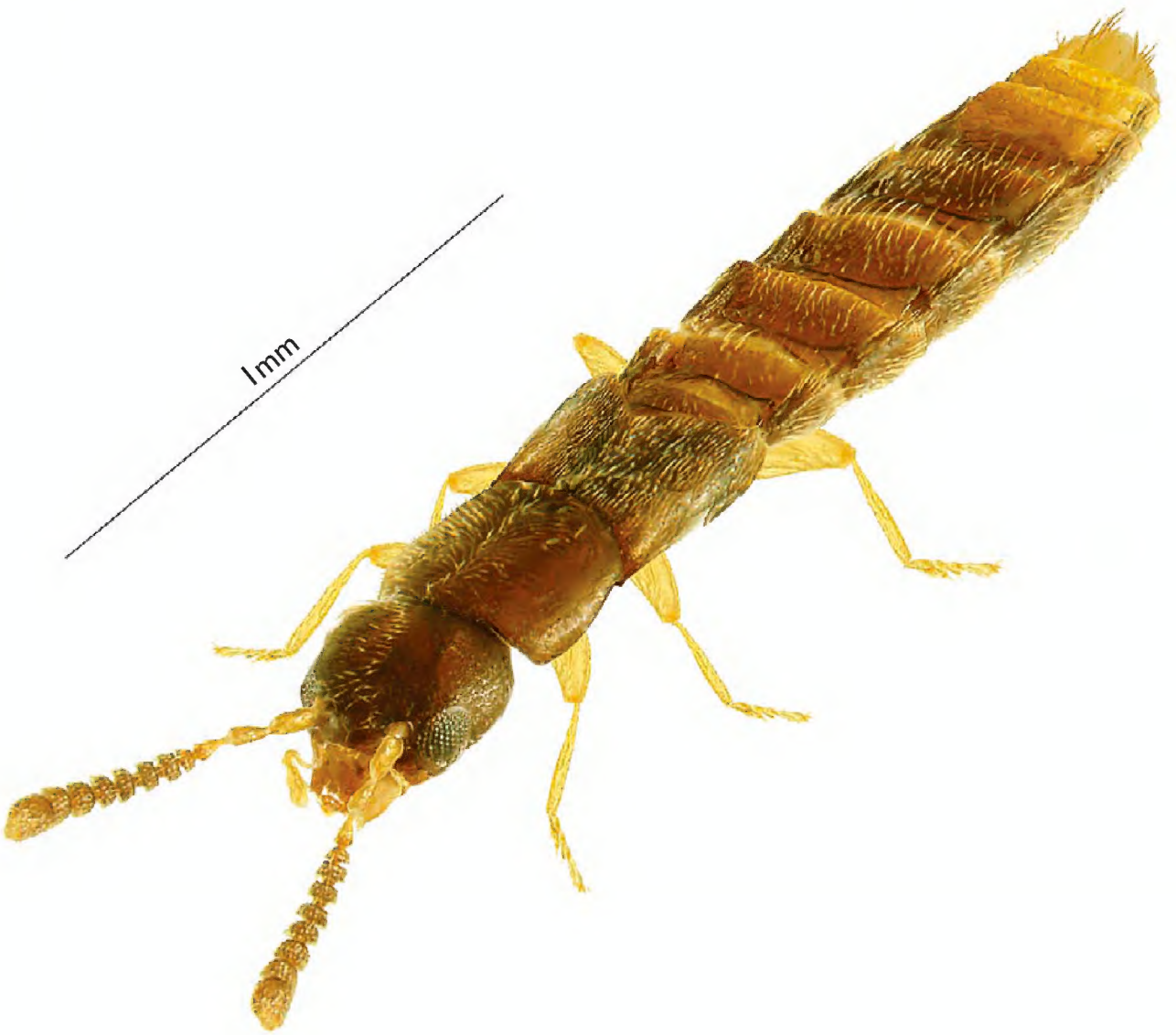

Figure 1. *Alisalia testacea* Casey, dorso-lateral view.

normally exerted beyond apex of internal sac (Figs 5, 12, 19, 31–34, 36–38); paramere with broad and short apical lobe bearing 3 macrosetae (Figs 6, 15, 22); male tergite 8 truncate apically (Figs 7, 13, 20); sternite 8 broadly rounded apically and often slightly pointed medially (Figs 8, 14, 21).

Alisalia (tarsal formula 4-4-4) is similar in general appearance to the genus *Meotica* Mulsant and Rey (tarsal formula 5-5-5) but may be readily distinguished by the tarsal formula, falcate tarsal claws and different genital features.

Bionomics. Adults of *Alisalia* in New Brunswick were collected on cobblestone beaches along lake and river margins, under cobblestones and rocks, on the margin of a large vernal pond in moist leaf litter, and at a light (one specimen).

Geographic distribution. Casey (1911) and Moore and Legner (1975) recorded 7 species of *Alisalia* in America north of Mexico. Seevers (1978) recorded 8 Nearctic species, and two additional species from Haiti, and Ashe (2001) confirmed 8 Nearctic species scattered from New England to California and mentioned one undescribed species from Mexico. Two additional new species are described from Canada and including the present new synonymy, there are now 8 valid species of *Alisalia* in the Nearctic region (same number as Ashe 2001, but different set of species).

Figures 2–4. *Alisalia* species in dorsal view (apical part of abdomen removed): **2** *A. minuta* Klimaszewski and Webster, sp. n. **3** *A. testacea* (Casey) **4** *A. elongata* Klimaszewski & Webster, sp. n.

Phylogenetic affiliation. *Alisalia* and allied genera (*Meotica* Mulsant & Rey, *Gyronycha* Casey, *Apimela* Mulsant & Rey, *Bamona* Sharp, and *Leptobamona* Casey) are currently considered to comprise the subtribe Meoticina Seevers of the tribe Oxypodini (Seevers 1978).

Checklist of *Alisalia* Casey species occurring in C anada with the U nited States records

Conventions. Junior synonyms are indented. Countries and provinces in bold represent new records. Species follow alphabetical order.

Checklist of *Alisalia* species in Canada and U.S.A.

Genus *Alisalia* Casey, 1911

1. *Alisalia antennalis* Casey 1911: 223 (UNITED STATES: Texas).
2. *Alisalia bistriata* (Bernhauer 1909: 528) [*Atheta* (*Meotica*) *bistriata* Bernhauer] (UNITED STATES: Pennsylvania).

3. *Alisalia brevipennis* Casey 1911: 220 (UNITED STATES: Rhode Island).
Alisalia minutissima Casey 1911: 221 (UNITED STATES: North Carolina). **syn. n.**
4. *Alisalia delicata* Casey 1911: 222 (UNITED STATES: Colorado).
5. *Alisalia elongata* Klimaszewski & Webster, **sp. n.** (**CANADA: New Brunswick**).
6. *Alisalia minuta* Klimaszewski & Webster, **sp. n.** (**CANADA: New Brunswick**).
7. *Alisalia parallela* Casey 1911: (UNITED STATES: Texas).
Alisalia austiniana Casey 1911: 222 (UNITED STATES: Texas). **syn. n.**
8. *Alisalia testacea* Casey 1911: 221 (**CANADA: N ew B runswick**; UNITED STATES: North Carolina).

Key to species of *Alisalia* recorded from Canada and the United States

(It should be noted that male genitalia offer the best diagnostic characteristics for species identification)

1. Elytra small, transverse and short, approximately as long as pronotum (elytra measured from anterior to posterior lateral angle) (Figs 27, 25); tubus of median lobe of aedeagus with almost straight ventral margin in lateral view (Fig. 36) ..... ***Alisalia brevipennis* Casey**
– Elytra larger, quadrate to slightly transverse, longer than pronotum (Figs 1–4, 23, 24, 26, 28–30) **2**

2(1). Species distributed in eastern Canada and eastern United States..... **3**
– Species distributed in western United States within Rocky Mountains; body and median lobe of aedeagus as illustrated (Figs 24, 32) ..... ***Alisalia delicata* Casey**

3(2). Body short, approximately 1 mm long (Fig. 30); tubus of the median lobe of the aedeagus straight for most of its length and with small basal swelling in lateral view (Fig. 38); known from Pennsylvania ..... ***Alisalia bistriata* (Bernhauer)**
– Body longer, distinctly more than 1 mm long (Figs 3, 4, 23, 24, 28, 29) ... **4**

4(3). Antennae robust (Figs 26, 28); tubus of median lobe of aedeagus long, with slightly sinuate ventral margin in lateral view (Figs 33, 34); known from Texas..... ***Alisalia parallela* Casey**
– Antennae less robust (Figs 1–4, 23, 29); tubus of median lobe of aedeagus differently shaped (Figs 5, 12, 16, 31) **5**

5(4). Body maximum width less than 0.2 mm (Fig. 2); head and elytra distinctly darker than pronotum; tubus of median lobe of aedeagus with straight and short subapical part and strongly convex medio-basal part (Fig. 5); spermatheca as illustrated (Fig. 9); known from New Brunswick..... ***Alisalia minuta* Klimaszewski & Webster, sp. n.**
– Body maximum width at least 0.2 mm (Figs 3, 4, 23, 29); head and elytra not distinctly darker than pronotum; tubus of median lobe of aedeagus with elongate and slightly sinuate subapical part and with strongly convex medio-basal part (Figs 12, 16, 31)..... **6**

6(5). Elytra large and slightly broadening posteriad, distinctly broader than pronotum (Fig. 4); tubus of median lobe of aedeagus with elongate and slightly sinuate subapical part and with strongly convex medio-basal part (Fig. 19); known from New Brunswick ..... ***Alisalia elongata*** **Klimaszewski & Webster, sp. n.**

– Elytra moderately large, subparallel and not distinctly broadening posteriad 7

7(6). Species currently known only from North Carolina and New Brunswick; body and genital structures as illustrated (Figs 1, 3, 12, 16, 23, 31) ..... ***Alisalia testacea*** **Casey**

– Species known from Texas; body and genital structures as illustrated (Figs 29, 35) ***Alisalia antennalis*** **Casey**

1. *Alisalia minuta* Klimaszewski & Webster, sp. n.

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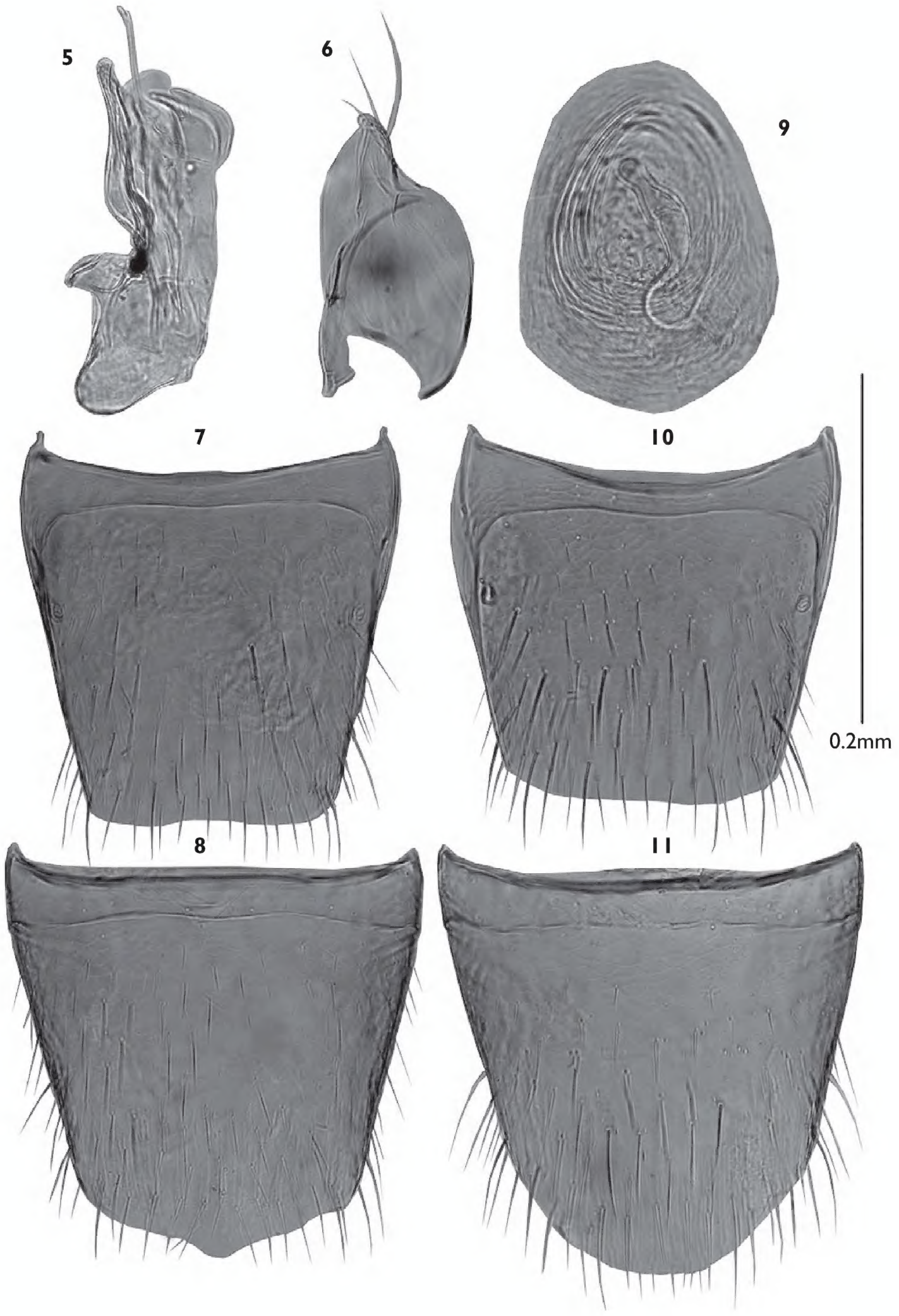
Figs 2, 5–11; Map 1

HOLOTYPE (male): CANADA, New Brunswick, Queens Co., Canning, Grande Lake, at Goat Island, 46.0110°N, 66.0133°W, 8.VIII.2007, R.P. Webster coll.; lakeshore, on cobblestone beach, under cobblestone in moist sand (LFC). **PARATYPES**: labelled as the holotype (LFC, RWC) 5 males, 16 females; New Brunswick, Carleton Co., Belleville, Meduxnekeag Valley Nature Preserve, 46.1944°N, 67.6832°W, 2.VI.2008, R.P. Webster coll., river margin under cobblestones in sand / gravel among scattered grasses (RWC) 2 males, 1 female; New Brunswick, York Co., 1.5 km N of Durham Bridge (at Nashwaak River), 46.1408°N, 66.6179°W, 15.VI.2008, R.P. Webster coll., river margin among cobblestones near outflow of brook (RWC) 1 male.

Etymology. The name of this species is the Latin adjective "minuta" meaning small, in reference to the small size of this species.

Description. *Alisalia minuta* may be distinguished from the other two *Alisalia* species recorded from Canada by its small and narrow bicoloured body (length 1.6–1.8 mm; maximum width 0.1 mm), slightly elongate elytra (Fig. 2), and the characteristic shape of the median lobe of aedeagus in lateral view (Fig. 5). For the differences between this and the other Nearctic species, see the key.

Body length 1.6–1.8 mm, narrowly subparallel; head, elytra and posterior part of abdomen dark brown, the remainder of the body light rust brown, legs and bases of antennae yellowish (Fig. 2); punctation on forebody fine and dense; microsculpture inconspicuous; pubescence of head directed obliquely lateroanterad, on pronotum laterad from midline of disc, on elytra obliquely or straight posteriad, and on abdomen approximately straight posteriad (Fig. 2); antennae moderately broad as illustrated (Fig. 2); pronotum slightly narrower than elytra, 1.1 times as wide as long; elytra slightly elongate, 1.1 times as long as wide; abdomen with sharply delimited horizontal basal depressions (Fig. 2). MALE: tergite 8 truncate apically and may bear shallow emargination (Fig. 7); sternite 8 broadly rounded apically, sometimes pointed medially (Fig. 8). Median lobe



Figures 5–11. *Alisalia minuta* Klimaszewski & Webster, sp. n.: **5** median lobe of aedeagus in lateral view **6** paramere **7** male tergite 8 **8** male sternite 8 **9** spermatheca **10** female tergite 8 **11** female sternite 8.

of aedeagus with moderately elongate and sinuate tubus, subapical part approximately straight and medio-basal part moderately convex, crista apicalis of bulbus moderately broad and slightly projecting ventrally (Fig. 5), flagellum slightly projecting externally, straight in shape (Fig. 5). Paramere as illustrated (Fig. 6). FEMALE. Tergite 8 truncate apically (Fig. 10); sternite 8 rounded apically (Fig. 11); spermatheca as illustrated (Fig. 9).

Bionomics

Macrohabitat: lake and river margins. **Microhabitat:** under cobblestones embedded in moist sand with fine grass roots in areas with grasses within 40 cm of water. **Collecting period:** June and August. **Collecting method:** aspirating from under cobblestones.

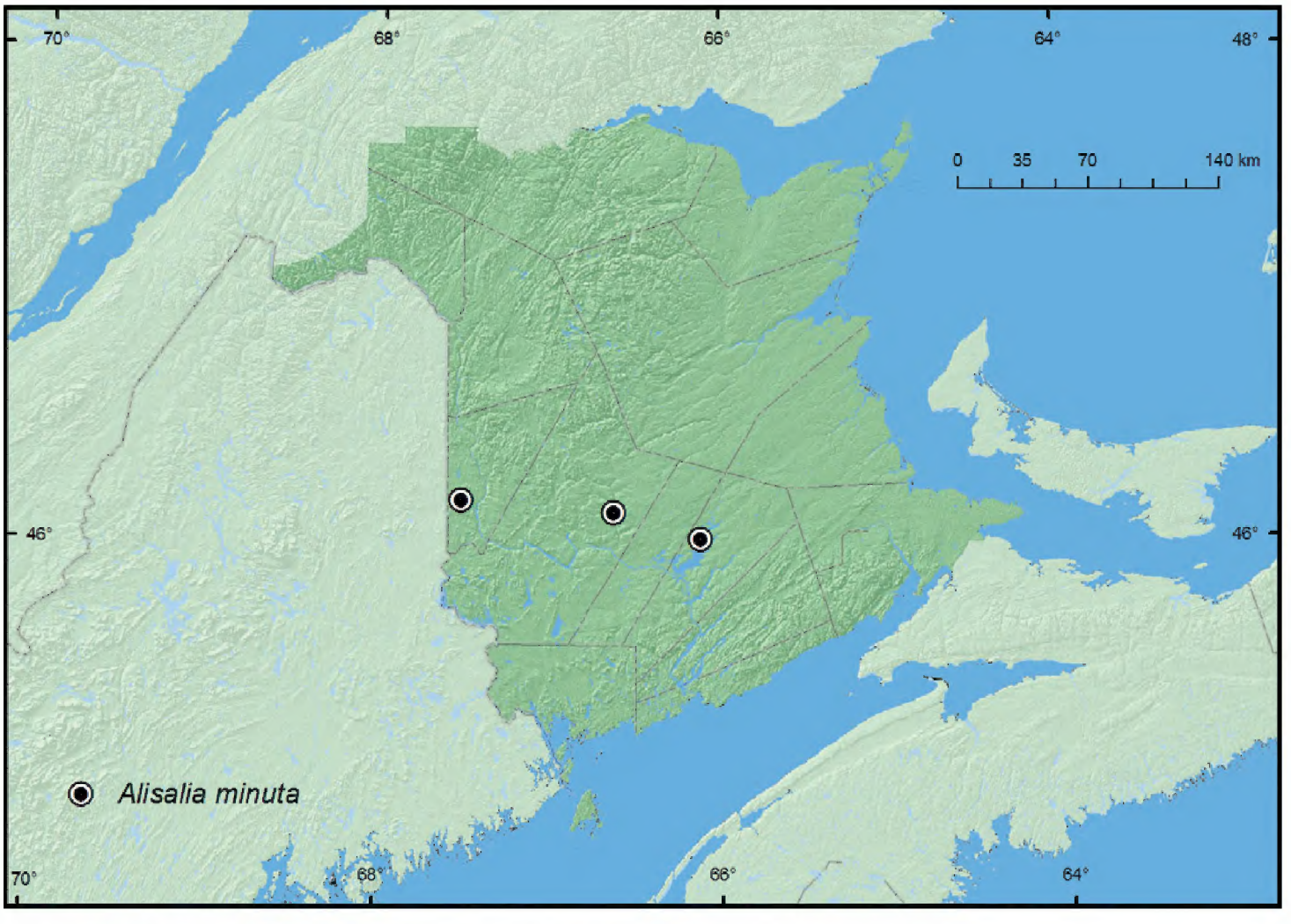
Distribution (Map 1). CANADA: **New Brunswick**.

2. *Alisalia testacea* Casey

Figs 1, 3, 12–18, Map 2

Alisalia testacea Casey 1911: 221; Moore and Legner 1975: 337.

LECTOTYPE (male): UNITED STATES: North Carolina; *testacea* – 7, Paratype USNM 38798; male; lectotypus, V.I. Gusarov 1999 [designation not published] (USNM). We designate this specimen as the lectotype of *A. testacea* in this paper.



Map 1. Collection localities in New Brunswick, Canada of *Alisalia minuta*

MATERIAL EXAMINED: CANADA, New Brunswick: Carleton Co., Belleville, Meduxnekeag Valley Nature Preserve, 46.1889°N, 67.6764°W, 2.VI.2008, R.P. Webster, coll., river margin under cobblestone in grassy area (RWC) 1 female; same locality and date but 46.1944°N, 67.6832°W, 2.VI.2008, R.P. Webster, coll., river margin under cobblestones in sand / gravel among scattered grasses (RWC) 2 males, 1 female; York Co., Dumfries, Slagundy Dry Ponds, 45.8596°N, 67.1849°W, 8.VII.2006, R.P. Webster, coll., large vernal pond, pond margin in moist leaf litter (LFC, RWC) 2 males, 1 female; Charters Settlement, 45.8395°N, 66.7391°W, 11.VI.2007, R.P. Webster, coll., at mercury vapour light (RWC) 1 male.

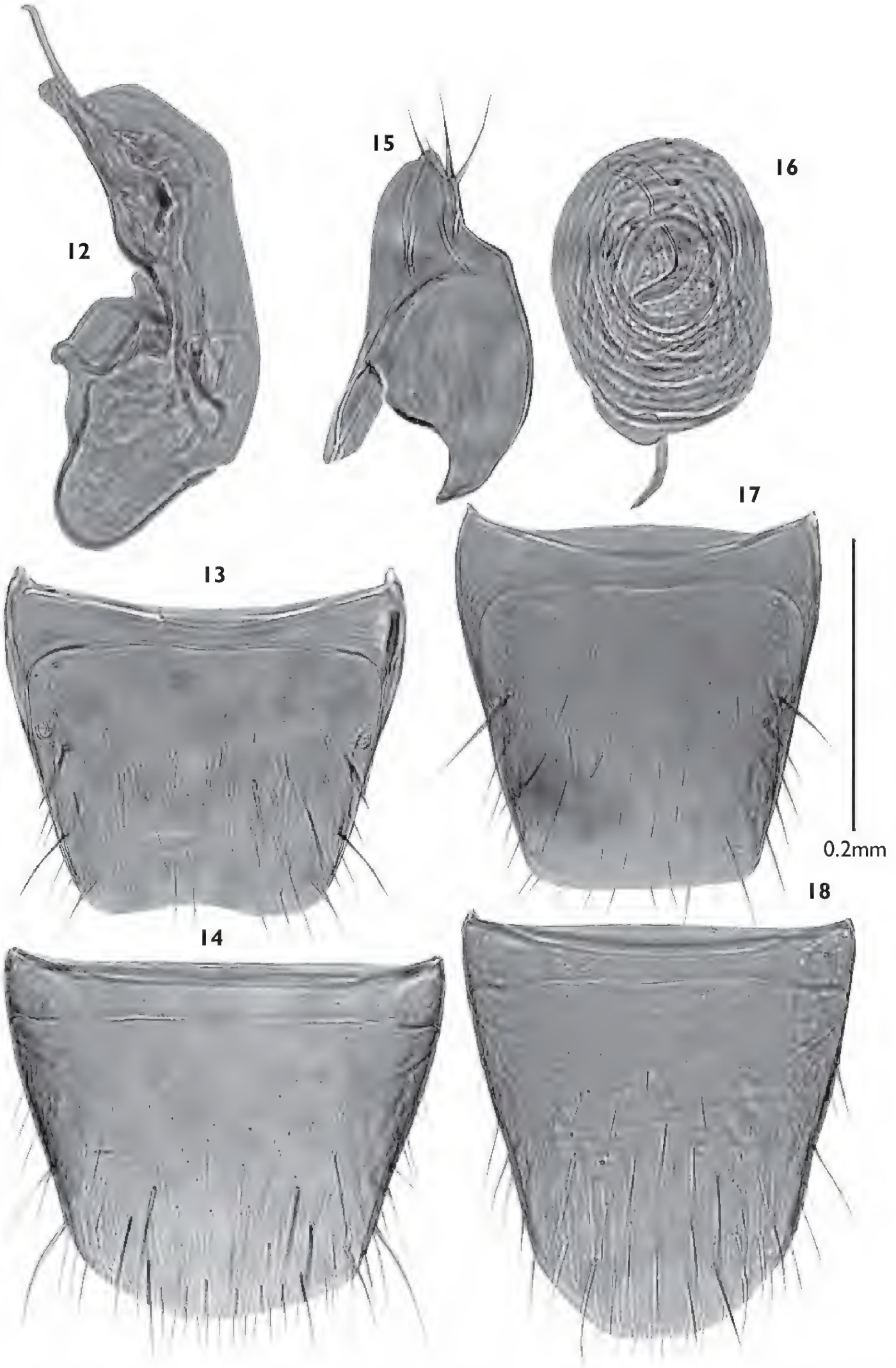
Description. *Alisalia testacea* may be distinguished from the other two *Alisalia* species recorded from Canada by its moderately larger and narrow approximately uniformly coloured body (length 1.7–1.8 mm; maximum width 0.1 mm), slightly elongate elytra (Figs 1, 3), and the characteristic shape of the median lobe of aedeagus in lateral view (Fig. 12). It has more transverse antennal articles than those of *A. minuta* (Fig. 3). For the differences between this and the other Nearctic species, see the key.

Body length 1.7–1.8 mm, narrowly subparallel; approximately uniformly dark or light brown, head, elytra and posterior part of abdomen may be slightly darker than the remainder of the body, legs and bases of antennae yellowish (Figs 1, 3); punctation on forebody fine and dense; microsculpture inconspicuous; pubescence of head directed obliquely lateroanterad, on pronotum laterad from midline of disc, on elytra obliquely or straight posteriad, and on abdomen approximately straight posteriad (Figs 1, 3); antennae broad as illustrated (Fig. 3); pronotum slightly narrower than elytra, 1.1 times as wide as long; elytra quadrate or slightly transverse (Fig. 3); abdomen with sharply delimited horizontal basal depressions (Figs 1, 3). MALE: tergite 8 truncate apically and may bear shallow emargination (Fig. 13); sternite 8 broadly rounded apically (Fig. 14). Median lobe of aedeagus with moderately elongate and sinuate tubus, subapical part approximately straight and medio-basal part strongly convex, crista apicalis of bulbus moderately broad (Figs 12, 31), flagellum slightly projecting externally, straight in shape (Figs 12, 31). Paramere as illustrated (Fig.15). FEMALE. Terminalia and spermatheca as illustrated (Figs 16–18).

Bionomics

Macrohabitat: river margin and margin of a large vernal pond. **Microhabitat:** Under cobblestones embedded in moist sand / clay or gravel mix with fine grass roots in areas with grasses within 40 cm of water. **Collecting period:** June and July. **Collecting method:** aspirating from under cobblestones and sifting leaf litter. One specimen collected at a light in mixed forest area.

Distribution (Map 2). CANADA: New Brunswick.



Figures 12–18. *Alisalia testacea* Casey: **12** median lobe of aedeagus in lateral view **13** male tergite 8 **14** male sternite 8 **15** paramere **16** spermatheca **17** female tergite 8 **18** female sternite 8.

Map 2. Collection localities in New Brunswick, Canada of *Alisalia testacea*

3. *Alisalia elongata* Klimaszewski & Webster, sp. n.
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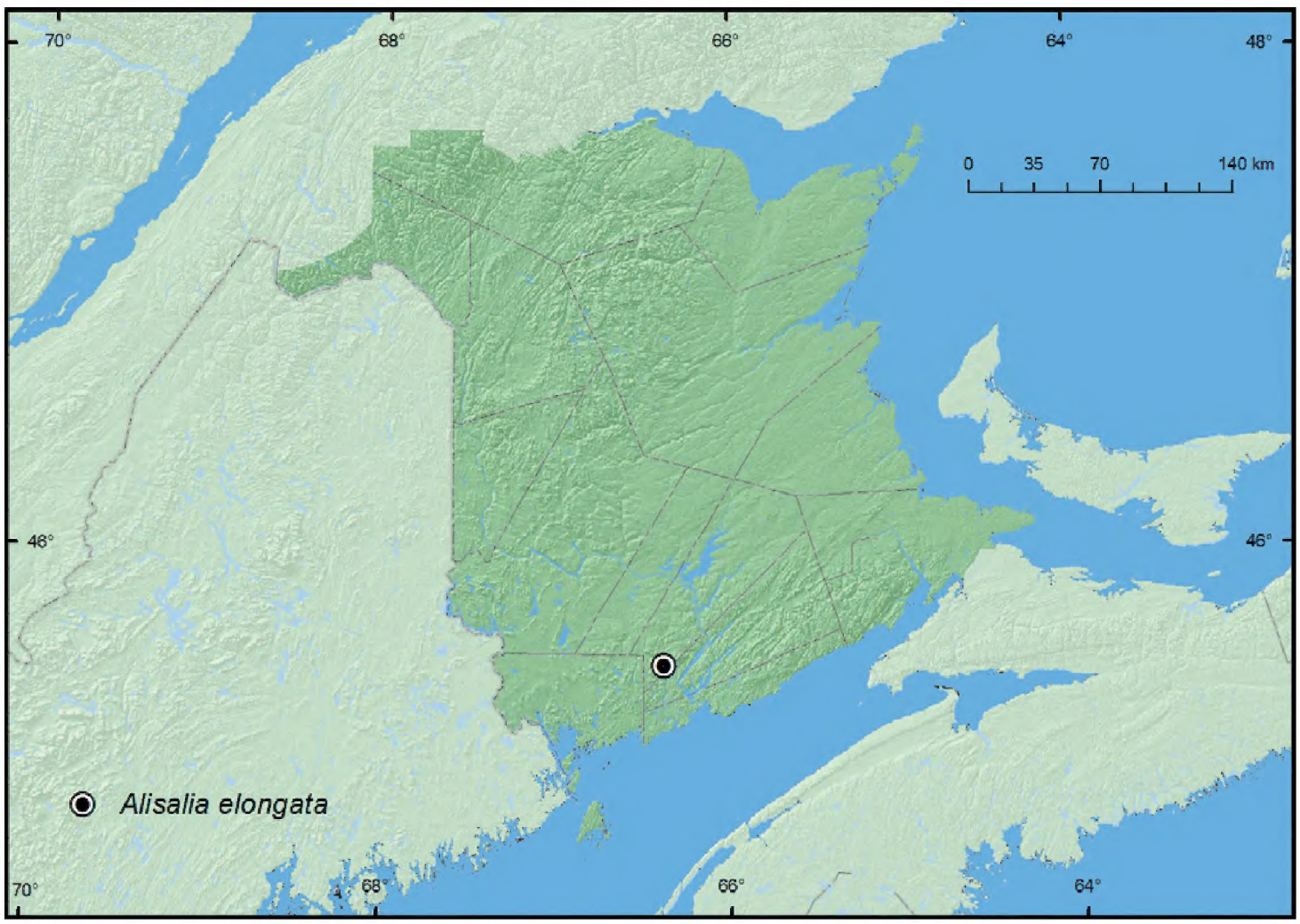
Figs 4, 19–22, Map 3

HOLOTYPE (male): CANADA, New Brunswick, Queens Co., Bayard, at Nerepis River, 45.4426°N, 66.3280°W, 30.V.2008, R.P. Webster, coll., river margin, under small rocks in gravel (LFC) 1 male. **PARATYPE**: labelled as the holotype (RWC) 1 male.

Etymology. The name of this species is the Latin adjective "elongata" meaning elongate, in reference to the elongate body shape of this species.

Description. *Alisalia elongata* may be distinguished from the other two *Alisalia* species recorded from Canada by the approximately uniformly coloured body (Fig. 4), the larger size (length 2.0 mm; maximum width 0.2 mm); strongly transverse pronotum and elytra (Fig. 4), and the characteristic shape of the median lobe of aedeagus in lateral view with an elongate subapical part (Fig. 19). It has fewer transverse antennal articles than for *A. testacea* and *A. minuta*. See the key for the differences between this and the other Nearctic species.

Figures 19–22. *Alisalia elongata* Klimaszewski & Webster, sp. n.: **19** median lobe of aedeagus in lateral view **20** male tergite 8 **21** male sternite 8 **22** paramere.



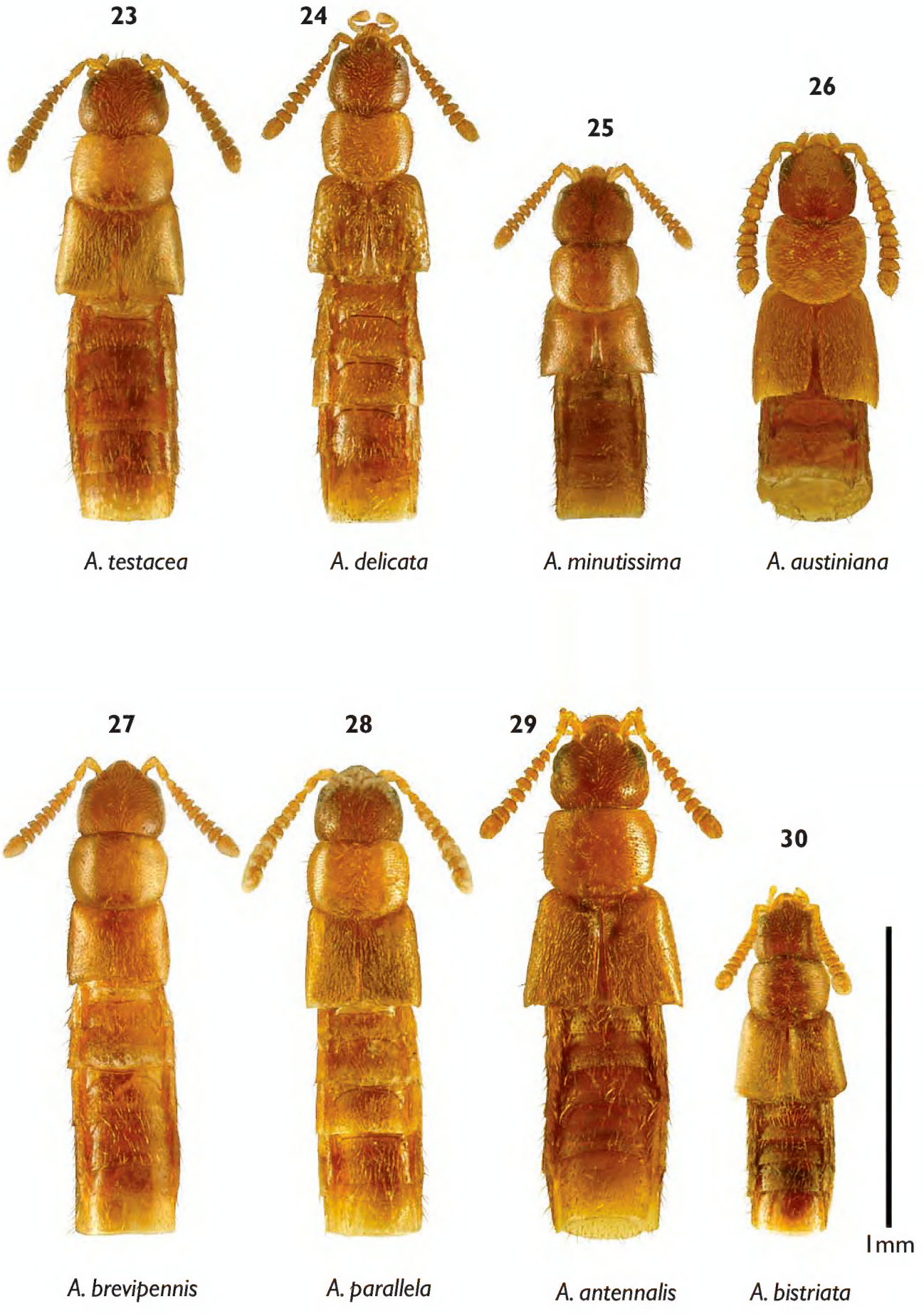
Map 3. Collection localities in New Brunswick, Canada of *Alisalia elongata*

Body length 2.0 mm, narrow but distinctly broader at elytra, and with abdomen slightly tapering posteriad; approximately uniformly dark reddish-brown, but head, elytra and posterior part of abdomen appearing slightly darker than the remainder of the body, legs and bases of antennae yellowish (Fig. 4); punctation on forebody fine and dense; microsculpture inconspicuous; pubescence of head directed obliquely lateroanterad, on pronotum laterad from midline of disc, on elytra obliquely or straight posteriad, and on abdomen approximately straight posteriad (Fig. 4); antennae moderately broad as illustrated (Fig. 4); pronotum distinctly narrower than elytra, 2 times as wide as long; elytra slightly transverse; abdomen with sharply delimited horizontal basal depressions. MALE: tergite 8 truncate apically (Fig. 20); sternite 8 broadly rounded apically (Fig. 21). Median lobe of aedeagus with elongate and sinuate tubus, subapical part long and approximately straight, and medio-basal part strongly convex, crista apicalis of bulbus broad (Fig. 19), flagellum slightly projecting externally, straight in shape (Fig. 19). Paramere as illustrated (Fig. 22). FEMALE. Unknown.

Bionomics

Macrohabitat: river margin. **Microhabitat:** under small rocks in gravel. **Collecting period:** May. **Collecting method:** aspirating from under rocks and gravel.

Distribution (Map 3). CANADA: New Brunswick.



Figures 23–30. *Alisalia* species based on type specimens: **23** *A. testacea* Casey (lectotype) **24** *A. delicata* (holotype) **25** *A. minutissima* Casey (holotype) [=*A. brevipennis* Casey] **26** *A. austiniana* Casey (lectotype) [=*A. parallela* Casey] **27** *A. brevipennis* Casey (lectotype) **28** *A. parallela* Casey (holotype) **29** *A. antennalis* Casey (holotype) **30** *A. bistriata* (Bernhauer) (lectotype).

Figures 31–38. Median lobe of aedeagus in lateral view and spermatheca based on type specimens: **31** *A. testacea* Casey (lectotype), median lobe **32** *A. delicata* (holotype), median lobe **33** *A. parallela* Casey (holotype), median lobe **34** *A. austiniana* Casey (lectotype) [=*A. parallela* Casey], median lobe **35** *A. antennalis* Casey (holotype), spermatheca **36** *A. brevipennis* Casey (lectotype), median lobe **37** *A. minutissima* Casey (holotype) [=*A. brevipennis* Casey], median lobe **38** *A. bistriata* (Bernhauer) (lectotype), median lobe.

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